

JOB SHEET 62

Diagnosing Lighting System Problems

Name: _____ Station: _____ Date: _____

NATEF Correlation

This Job Sheet addresses the following NATEF task(s):

- 6.E.1** Diagnose the cause of brighter than normal, intermittent, dim, or no light operation; determine necessary action. (P-1)
- 6.E.3** Inspect and diagnose incorrect turn signal or hazard light operation; perform necessary action. (P-2)

Performance Objective(s)

Upon completion of this Job Sheet, you will be able to understand how to properly test the headlight and turn signal circuits for improper circuit operation.

Tools and Materials

DMM
Service manual
Technician's tool set
Vehicle
Charging system tester
Battery tester

Protective Clothing/Equipment

Goggles or safety glasses with side shields

Describe the vehicle being worked on:

Year	Make	Model	VIN	Engine type and size

PROCEDURE

1. Test the operation of the headlights and turn signals. Do they appear brighter or dimmer than usual?

2. Sometimes the headlights will be brighter than normal due to an overcharged battery. Dimmer than normal headlights can be caused by several circuit defects including a low battery charge or a charging system malfunction. Refer to Job Sheets #46 and #55 to test the battery and charging system for malfunctions and overcharging.

Task Completed _____

3. Are the battery and charging system operating properly?

4. If the battery is charged properly, check the voltage drop on the ground side of the headlight for dimmer than usual headlights. What was your voltage reading?

5. Check the voltage at the positive (insulated) side of the headlight. What is the voltage reading?

6. Remove the test meter and reconnect the connector. With the headlights on, wiggle the connector and wiring harness. Did the lights have intermittent operation?

7. Based on your test results, describe the condition of the headlight circuit.

8. With the key on, turn on the turn signals and note the blinking speed and light operation. A difference in blink rate can indicate that a bulb is inoperative. Explain what you found.

9. The hazard lights should operate with the key off. Activate the hazard switch and check all external hazard lights.

Note: Keep your foot off the brake pedal.

Task Completed _____

10. What could cause the turn signals to work but not the hazards?

Problems Encountered

INSTRUCTOR EVALUATION

- ☐ 4 Mastered Task
- ☐ 3 Able to Perform Task Independently; Some Additional Training Suggested
- ☐ 2 Able to Perform Task with Close Supervision; Requires Additional Training
- ☐ 1 Unable to Perform Task
- ☐ 0 Not Attempted

Comments

Instructor Name: _____ Date: _____

Instructor Signature: _____

JOB SHEET 63

Headlight Aiming

Name: _____ Station: _____ Date: _____

NATEF Correlation

This Job Sheet addresses the following NATEF task(s):

6.E.2 Inspect, replace, and aim headlights and bulbs. (P-2)

Performance Objective(s)

Upon completion of this Job Sheet, you will be able to understand how to properly aim headlights.

Tools and Materials

Service manual

Technician's tool set

Headlight aiming kit

Protective Clothing/Equipment

Goggles or safety glasses with side shields

Describe the vehicle being worked on:

Year	Make	Model	VIN	Engine type and size

PROCEDURE

1. Place the vehicle on a level working surface. Install the aiming unit on the headlight lens. Calibrate the aiming unit according to the manufacturer's instructions.

Task Completed _____

2. Check the tire pressures.

RF	LF	RR	LR

3. Adjust the tire pressure to the correct pressure.

Task Completed _____

4. Check the cargo/trunk area. Unload if necessary.

Task Completed _____

5. Connect the headlight aimer and note the vertical and horizontal readings.

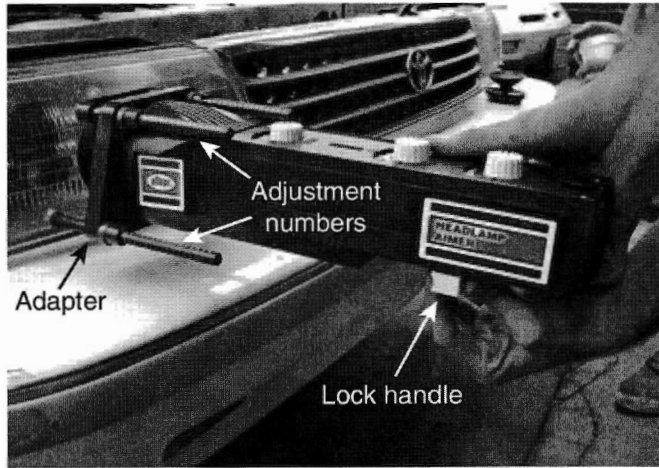


Figure 33.32 Attaching a headlamp aimer to the headlamp.

		Right			Left
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6. Make the necessary adjustments to align the headlights.

Task Completed _____

7. To replace a headlight, determine the type first.

8. Describe how to remove the headlight.

9. Carefully remove the headlight and reinstall it, or the new one, as directed by your instructor.

Task Completed _____

10. Test the operation of the headlight. Does it work?

Problems Encountered

INSTRUCTOR EVALUATION

- ☐ 4 Mastered Task
- ☐ 3 Able to Perform Task Independently; Some Additional Training Suggested
- ☐ 2 Able to Perform Task with Close Supervision; Requires Additional Training
- ☐ 1 Unable to Perform Task
- ☐ 0 Not Attempted

Comments

Instructor Name: _____ Date: _____

Instructor Signature: _____

JOB SHEET 64

Inspecting High-Intensity Discharge Headlights

Name: _____ Station: _____ Date: _____

NATEF Correlation

This Job Sheet addresses the following NATEF task(s):

- 6.E.4** Identify system voltage and safety precautions associated with high-intensity discharge headlights. (P-2)

Performance Objective(s)

Upon completion of this Job Sheet, you will be able to understand how to properly inspect a vehicle that has high-intensity discharge (HID) headlights and how to work safely around them.

Tools and Materials

Service manual
Technician's tool set
Vehicle with HID headlights

Protective Clothing/Equipment

Goggles or safety glasses with side shields

Describe the vehicle being worked on:

Year	Make	Model	VIN	Engine type and size

PROCEDURE

1. Use the service manual to find out if this vehicle has a fail-safe mode. If so, describe how it works.

2. Describe the construction and operation of the HID light bulb system in this vehicle.

3. List five safe work practices when working with HID lighting systems.

4. How many volts may be present at the high-voltage socket when the lights are on?

5. List any other precautions that the manufacturer gives for HID lights.

Problems Encountered

INSTRUCTOR EVALUATION

- ☐ 4 Mastered Task
- ☐ 3 Able to Perform Task Independently; Some Additional Training Suggested
- ☐ 2 Able to Perform Task with Close Supervision; Requires Additional Training
- ☐ 1 Unable to Perform Task
- ☐ 0 Not Attempted

Comments

Instructor Name: _____ Date: _____

Instructor Signature: _____